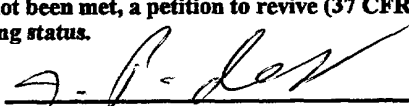98 Rec'd PCT/PTO 11 JAN 2002s

FORM PTO-1390 (REV. 11-2000) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY 'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371	7195
	U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 107030079

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP00/06827	17 July 2000	15 July 1999

TITLE OF INVENTION

METHOD FOR IMAGE DATA PROCESSING AND CAMERA RECORDING SYSTEM

APPLICANT(S) FOR DO/EO/US   STEFFEN SETZER et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. [ ] This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.

4. [ ] The US has been elected by the expiration of 19 months from the priority date (Article 31).

5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
     a. [X] is attached hereto (required only if not communicated by the International Bureau).
     b. [ ] has been communicated by the International Bureau.
     c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).

6. [ ] An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
     a. [ ] is attached hereto.
     b. [ ] has been previously submitted under 35 U.S.C. 154(d)(4).

7. [ ] Amendments to the claims of the International Aplication under PCT Article 19 (35 U.S.C. 371(c)(3))
     a. [ ] are attached hereto (required only if not communicated by the International Bureau).
     b. [ ] have been communicated by the International Bureau.
     c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
     d. [ ] have not been made and will not be made.

8. [ ] An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).

9. [ ] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).

10. [ ] An English lanugage translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. [ ] A FIRST preliminary amendment.

14. [ ] A SECOND or SUBSEQUENT preliminary amendment.

15. [ ] A substitute specification.

16. [ ] A change of power of attorney and/or address letter.

17. [ ] A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.

18. [ ] A second copy of the published international application under 35 U.S.C. 154(d)(4).

19. [ ] A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).

20. [ ] Other items or information:

page 1 of 2

(1 January 2001)

U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 10/030079	INTERNATIONAL APPLICATION NO. PCT/EP00/06827	ATTORNEY'S DOCKET NUMBER 7195

21. ☒ The following fees are submitted:	CALCULATIONS PTO USE ONLY

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):

Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO **$1000.00**

International preliminary examination fee (37 CFR 1.482) not paid to
USPTO but International Search Report prepared by the EPO or JPO **$860.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **$710.00**

International preliminary examination fee (37 CFR 1.482) paid to USPTO
but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$690.00**

International preliminary examination fee (37 CFR 1.482) paid to USPTO
and all claims satisfied provisions of PCT Article 33(1)-(4) **$100.00**

ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 890.00	

Surcharge of $130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$ 130.00	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	$	
Total claims	- 20 =		x $18.00	$	
Independent claims	- 3 =		x $80.00	$	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ $270.00	$	

TOTAL OF ABOVE CALCULATIONS =	$1,020.00	
☒ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2. +	$ 510.00	
SUBTOTAL =	$ 510.00	
Processing fee of $130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).	$ 130.00	
TOTAL NATIONAL FEE =	$ 640.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property +	$	
TOTAL FEES ENCLOSED =	$ 640.00	

	Amount to be refunded:	$
	charged:	$

a. ☒ A check in the amount of $ 640.00 _____ to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 19-2105 A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING: Information on this form may become public. Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

SHLESINGER, AKRWRIGHT & GARVEY LLP
3000 SOUTH EADS STREET
ARLINGTON, VIRGINIA 22202

SIGNATURE

JOSEFINO P. DE LEON
NAME

33,166
REGISTRATION NUMBER

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of   :   April 12, 2002

STEFFEN SETZER   :

Serial No.: 10/030,079   :

I.A. Application No.: PCT/EP00/06827:

I.A. Filing Date: 07/17/2000   :

For: METHOD FOR IMAGE DATA   :
     PROCESSING AND CAMERA   :
     RECORDING SYSTEM   :

PRELIMINARY AMENDMENT

Honorable Commissioner of Patents
    and Trademarks
Washington, D.C.   20231

Dear Sir:

    Please amend the above-identified application as follows:

IN THE CLAIMS:

    Please replace the English translated sheets 9-10 with

replacement sheets 9-11 attached hereto.

REMARKS

    Applicant has amended claims 1-5, 7 and 9-13 to remove

multiple dependencies and to reformat the claims.

    A marked-up version of the claims showing the changes made are

attached herewith.

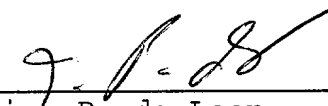It is respectfully requested that the amendment be entered before computing the filing fee.

Respectfully submitted,

Josefino P. de Leon
Reg. No. 33,166

SHLESINGER, ARKWRIGHT & GARVEY LLP
3000 South Eads Street
Arlington, Virginia 22202
(703) 684-5600
lm

Claims:

1.   (Amended)   A method for image data processing, comprising:
       separating object data of an image data set (object data
set) representing an image foreground from a data set (background
data set) representing an image background, and
       altering a background to be recorded by the camera at a
frequency tuned to a recording frequency of the recording camera.

2.   (Amended)   The method according to Claim 1, wherein the
altering of the background occurs by switching between two
states.

3.   (Amended)   The method according to Claim 1, wherein the
altering of the background occurs gradually between two states
with multiple intermediate states.

4.   (Amended)   The method according to Claim 1, wherein the
color and/or brightness and/or saturation of the background is
altered.

5.   (Amended)   The method according to Claim 1, wherein the
recording frequency of the camera is a multiple of the playback
frequency.

6.   The method according to Claim 5, wherein the recording
frequency is double the typical television image frequency.

7.   (Amended)   The method according to Claim 1, wherein a
comparison of the data sets of camera images recorded at a
different instant within a replay frequency is performed to
establish the assignment of an element of a camera image data set
to the object data set or the background data set.

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8.   The method according to Claim 7, wherein the comparison includes a subtraction of elements of identical coordinates or regions of the camera image data sets.

9.   (Amended)   The method according to Claim 7, wherein the elements of the camera image data sets compared with one another are pixels.

10.   (Amended)   The method according to Claim 8, wherein the elements of the camera image data sets compared with one another are pixel regions.

11.   (Amended)   The method according to Claim 1, wherein methods of artificial intelligence, such as neuronal nets, are used for recognition and assignment of the elements of the camera image data sets.

12.   (Amended)   The method according to Claim 1, wherein the elements of the camera image data set identified as associated with the background data set are replaced by elements of corresponding coordinates or regions of a data set of a replacement background.

13.   (Amended)   A camera recording system Claim 1, comprising:
     at least one camera for recording an object located in front of a background, with an alteration of the background occurring at a frequency tuned to a recording frequency of the recording camera.

14.   The camera recording system according to Claim 13, wherein a film-like or sheet-like element influenceable in an optically defined way is provided as a background.

15.   The camera recording system according to Claim 14,
wherein the background element is an electroluminescent or
electrochromatic flat element.

WO 01/06766   PCT/EP00/06827

Claims:

1.   A method for image data processing, comprising:
separating wherein object data of an image data set (object
data set) representing an image foreground is separated from a
data set (background data set) representing an image background,
and
altering wherein a background to be recorded by the camera
is altered at a frequency tuned to a recording frequency of the
recording camera.

2.   The method according to Claim 1, wherein the altering
alteration of the background occurs by switching between two
states.

3.   The method according to Claim 1, wherein the altering
alteration of the background occurs gradually between two states
with multiple intermediate states.

4.   The method according to one of Claims 1 to 3 Claim 1,
wherein the color and/or brightness and/or saturation of the
background is altered.

5.   The method according to one of Claims 1 to 4 Claim 1,
wherein the recording frequency of the camera is a multiple of
the playback frequency.

6.   The method according to Claim 5, wherein the recording
frequency is double the typical television image frequency.

7.   The method according to ~~one of Claims 1 to 6~~ Claim 1,
wherein a comparison of the data sets of camera images recorded
at a different instant within a replay frequency is performed to
establish the assignment of an element of a camera image data set
to the object data set or the background data set.

8.   The method according to Claim 7, wherein the comparison
includes a subtraction of elements of identical coordinates or
regions of the camera image data sets.

9.   The method according to ~~Claim 7 or 8~~ Claim 7, wherein the
elements of the camera image data sets compared with one another
are pixels.

10.   The method according to ~~Claim 8 or 9~~ Claim 8, wherein the
elements of the camera image data sets compared with one another
are pixel regions.

11.   The method according to ~~one of Claims 1 to 6~~ Claim 1,
wherein methods of artificial intelligence, such as neuronal
nets, are used for recognition and assignment of the elements of
the camera image data sets.

12.   The method according to ~~one of Claims 6 to 11~~ Claim 1,
wherein the elements of the camera image data set identified as
associated with the background data set are replaced by elements
of corresponding coordinates or regions of a data set of a
replacement background.

13.   A camera recording system~~, particularly for performing the
method according to one of Claims 1 to 12~~ Claim 1, comprising:
    ~~having~~ at least one camera for recording an object located
in front of a background, with an alteration of the background

occurring at a frequency tuned to a recording frequency of the recording camera.

14.   The camera recording system according to Claim 13, wherein a film-like or sheet-like element influenceable in an optically defined way is provided as a background.

15.   The camera recording system according to Claim 14, wherein the background element is an electroluminescent or electrochromatic flat element.

METHOD FOR IMAGE DATA PROCESSING AND CAMERA RECORDING SYSTEM

The present invention relates to a method for image data
processing in which object data of an image data set representing
an image foreground is separated from a data set representing an
image background, as well as a camera recording system, which is
particularly suitable for performing a method of this type.

The blue screen method is known from television technology, in
which a surface forming the background of the setting to be
recorded is implemented as a monochrome, particularly blue,
background. The recording of an object in front of this
background is first recorded by a television camera at an image
frequency of, normally, 50 to 60 half-frames per second, while in
parallel to this a background replacing the blue background of
the first image, for example a weather map, is recorded by a
second television camera. The two image sequences recorded in
parallel are superimposed in synchronization on one another in a
mixer and the blue background area is replaced by the image
recorded with the second television camera.

In the blue screen method, two principle methods are
differentiated, the first of which is based on a definition of
the chromaticity (the color representing the background is
defined as transparent), while in the second method, which was
commercially exploited particularly by the firm Ultimatte, the
background is defined via the consistency of the brightness
and/or saturation of the color space of the background.

The advantage of the known methods is that the processing of the
analog image data is relatively simple and occurs in real time.
It is a disadvantage that the typically blue, but also frequently
green, background has to be very well illuminated, since the
color or brightness and/or saturation of the color, respectively,
must be very uniform and of high quality in the image sequence

recorded, which may only be achieved by excellent illumination of the colored surface representing the background. This illumination is, however, connected with a very high outlay, since the typical lighting time for a recording studio is approximately one week, or often even more. Not considering the man time connected with this, a large amount of power is consumed and unpleasantly large amounts of heat are produced for those working in the vicinity of the recording. Furthermore, it is disadvantageous that shadows and/or reflections must be avoided, which makes the lighting even more difficult. Reflections may not be corrected with the known methods, and shadows only with difficulty.

However, according to the present invention a method for image data processing having the features of Claim 1 and a camera recording system having the features of Claim 8 is suggested.

The present invention is based on the idea that the background is altered in a defined way at a frequency tuned to the recording frequency of the recording camera. Tuning is understood here to mean that the frequency of the background alteration has a known ratio to the recording frequency. This may be an integer multiple of the recording frequency, but could also be any desired multiple. The recording frequency is preferably a multiple of the playback frequency, for example double the typical television image frequency, i.e., approximately 100 to 120 half-frames per second. In principle, the method according to the present invention functions, as will be described in the following, at any desired recording frequency up to several thousand images per second, with the alteration frequency of the background tuned to this. A requirement is that the content (foreground) of two images recorded in sequence does not alter or at least alters only insignificantly, since every second image of the image sequence is used as a reference image.

The method according to the present invention opens up the
possibility of using digital cameras and of the utilization of
their technical advantages. The recording of an image sequence
at, for example, double frequency with a background changing in a
defined way corresponding to this frequency leads to a sequence
of image pairs, with each two images forming an image pair (at
the typical movement speeds of recorded objects) not or barely
able to be differentiated from one another except for the
background, which alters in a defined way from one recording to
the next. One of the two images of an image pair may thus be used
as a reference image for the respective other image.

Using the advantages of digital recording technology—each
recorded pixel of an image may be directly compared with the
corresponding pixel of the following image—the two images of an
image pair are compared with one another, in that, for example,
each pixel of the reference image is subtracted from the
corresponding pixel of the other image. While, as a result of the
comparison, a value of zero or almost zero results for the
foreground of the object forming the recording if there is no
alteration (non-moving or slowly moving object) and an arbitrary
value not equal to zero results for a slight alteration (rapidly
moving object), the comparison of the background surfaces results
in a predetermined defined value, since the background was
purposely altered in a defined way from the recording of the one
image to the next image. The alteration of the background may be
performed by switching between two states or by gradual
continuous oscillation, for example sinusoid, between the two
states.

In order to now separate the foreground of the object forming the
recording from the background, to "clip it out," all pixels to
which a defined content was assigned during the comparison of the
two images forming an image pair are suppressed and possibly
replaced by the content of an image recorded in parallel (for
example the weather map). This second image may have any desired

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source. Instead of the image recorded in parallel as described, a single image (fixed image) may also be used as a background or, for example, even a computer-generated image and/or image sequence.

In a preferred embodiment of the invention, to determine the assignment of an element of a camera image data set to the object data set or the background data set, a comparison of the data sets of camera images recorded at a different instant within a playback frequency is performed. If the recording frequency is, for example, three times the later playback frequency, then during one playback frequency, i.e., within a period corresponding to the playback frequency, three camera images are recorded. These three images are compared with one another to identify any desired element in the camera image as an object or background. The comparison preferably occurs in pairs. Thus, for example, the first camera image of this sequence of three images is first compared with the second image and then with the third image, and finally the second image is compared with the third image. In order to design the method more economically, the comparison may be performed in steps, with sequential comparison steps only performed if the prior method steps have not yet provided an unequivocal result, i.e., have not yet allowed unequivocal assignment of the camera image element as object or background.

In a particularly preferred embodiment, the comparison is a subtraction of elements of identical coordinates or regions of the camera image data sets, with the elements of the camera image data sets to be compared with one another able to be single pixels or even pixel regions. A comparison of pixel regions has been shown to be particularly advantageous, since the method may then be performed more rapidly. It suggests itself in this case to first select larger pixel regions, in order possibly to subdivide these into subregions step-by-step. The method according to the present invention also opens up the possibility

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of comparing not only two-dimensional pixel regions with one another, but also n-dimensional pixel regions.

As described above, the method according to the present invention may be performed at any desired recording frequency up to several thousand images per second. The higher the recording frequency is, the larger the number of images having different background states (particularly background brightnesses) recorded within one playback period, which causes the comparison possibilities, i.e., the permutations of comparison pairs, to increase significantly. In this way, a better foundation for the assignment of a camera image element to the background data set or the object data set is given.

In addition, the present invention opens up the possibility of evaluating the reflection behavior of objects in the camera image at a high recording frequency and gradual background alteration and drawing conclusions about the refractive index and the material of the object from this. This, in turn, allows the adjustment of the relevant data set elements of the object data set to the new replacement background, which replaces the original recording background. In contrast to the methods known from the related art, not only is correction of reflections (and shadows) possible according to the present invention, but also their evaluation, in order to allow the recognition of the affiliation as object or background of an image element or the adjustment of the image and/or the object to a background used. In this way, shadows and/or reflections on the object and/or the background may be recognized according to the present invention and, depending on the application or the desire of the user, suppressed or adjusted and processed in another way.

The method according to the present invention is preferably performed using a neuronal net or other methods of artificial intelligence (AI). In this way, particularly good recognition and

assignment of the image elements as object, background, reflection, shadow, etc. is achieved.

Finally, the present invention opens up the possibility of investigating the camera image data sets not only for an assignment in the two-dimensional range (object and background affiliation), but also to obtain further information about the object and/or the background, such as the speed, among other things. This in turn allows conclusions about three-dimensional data of the camera image data set (distance from the camera etc.), so that the present invention is suitable not only for two-dimensional, but also for multidimensional image data processing.

Furthermore, it has been shown to be advantageous to alter the recording background only partially during the recording.

To perform the method according to the present invention, film-like or sheet-like elements are preferably used, which may be optically influenced very rapidly in a targeted way, i.e., their color and/or brightness and/or saturation may be switched from a first preset value to a second preset value in a very short time. For this purpose, electroluminescent or electrochromatic flat elements are particularly suitable, as they are already known from the related art.

Further advantages and embodiments of the present invention result from the description and the attached drawing.

It is obvious that the features previously mentioned and described in the following are usable not only in the respective combination indicated, but also in other combinations or alone, without leaving the framework of the present invention.

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The present invention is schematically illustrated in the drawing with reference to an exemplary embodiment and is described in detail in the following with reference to the drawing.

Fig. 1   shows a block diagram to illustrate the present invention.

Fig. 2   shows a block diagram to illustrate an evaluation unit to be used in the present invention.

The central component of the invention is the recording of one or more objects (objects 1 to m) by one or more cameras (cameras 1 to n), the objects being located in front of a background. The background is, according to the present invention, influenceable and/or alterable at a high frequency. The alteration frequency is tuned to a recording frequency of the recording camera(s) in this case. The alteration of the background particularly occurs in regard to its color and/or brightness and/or saturation.

The influenceable parameters of the background are thus, besides the alteration frequency, the color, the brightness, and/or the saturation. In the camera(s), the influenceable parameter is, besides the typical camera parameters, the recording frequency, possibly restricted to a definable image region x*y. These parameters are controlled by the evaluation unit, with direct control, particularly for adjustment of the camera(s) to the background, also being possible.

Objects 1 to m included by the background, i.e., surrounded by the background, are recorded with cameras 1 to n, the recording frequency of the cameras being a multiple of the later playback frequency. As a result, Az camera images from n cameras are provided per time unit z, which are supplied to the evaluation unit illustrated in more detail in Fig. 2.

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The evaluation unit illustrated in Fig. 2 is, for each of the 1 to n cameras, its own camera-specific evaluation unit is provided, which are each supplied the data of the Az camera images. In consideration of the additional parameters, as they were described previously, also supplied to each camera-specific evaluation unit, in each camera-specific evaluation unit the object(s) is/are separated from a background, in that an identification and an assignment of individual camera image elements (pixels or pixel regions) to "object" or "background" occurs. After the assignment is performed, the image elements assigned to the background are removed and replaced by image elements of a replacement background. In simple applications, this replacement background is a static, unchanging image, for example the weather map. However, more complex applications are also possible and are made easier by the present invention, such as the overlay of separately recorded images or moving images generated by a computer as a background during studio recordings. The cycle of the identification was already described above.

The image data produced by the individual camera-specific evaluation units is then supplied to a central recording-instant-specific evaluation unit, which includes a buffer for evaluating multiple time units and is used for synchronization and tuning of the data supplied by the camera-specific evaluation units. The usage of multiple cameras allows the generation of image data which is suitable for playback observable by an observer from different perspectives as "three-dimensional." A recording and playback method of this type is, for example, described in German Patent Application 199 13 853.2.

The data produced by the central recording-instant-specific evaluation unit is output from the evaluation unit, so that a single image (frame) is present as a result (cf. Fig. 1), in which the background and the object are separated from one another. A typical playback frequency of the frame produced is approximately 25 to 30 sec^{-1} (television image frequency).

Claims:

1.   A method for image data processing,
wherein object data of an image data set (object data set)
representing an image foreground is separated from a data set
(background data set) representing an image background, wherein a
background to be recorded by the camera is altered at a frequency
tuned to a recording frequency of the recording camera.

2.   The method according to Claim 1,
wherein the alteration of the background occurs by switching
between two states.

3.   The method according to Claim 1, wherein the alteration of
the background occurs gradually between two states with multiple
intermediate states.

4.   The method according to one of Claims 1 to 3,
wherein the color and/or brightness and/or saturation of the
background is altered.

5.   The method according to one of Claims 1 to 4,
wherein the recording frequency of the camera is a multiple of
the playback frequency.

6.   The method according to Claim 5,
wherein the recording frequency is double the typical television
image frequency.

7.   The method according to one of Claims 1 to 6,
wherein a comparison of the data sets of camera images recorded
at a different instant within a replay frequency is performed to
establish the assignment of an element of a camera image data set
to the object data set or the background data set.

8.   The method according to Claim 7,

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wherein the comparison includes a subtraction of elements of identical coordinates or regions of the camera image data sets.

9.   The method according to Claim 7 or 8,
wherein the elements of the camera image data sets compared with one another are pixels.

10.   The method according to Claim 8 or 9,
wherein the elements of the camera image data sets compared with one another are pixel regions.

11.   The method according to one of Claims 1 to 6,
wherein methods of artificial intelligence, such as neuronal nets, are used for recognition and assignment of the elements of the camera image data sets.

12.   The method according to one of Claims 6 to 11,
wherein the elements of the camera image data set identified as associated with the background data set are replaced by elements of corresponding coordinates or regions of a data set of a replacement background.

13.   A camera recording system, particularly for performing the method according to one of Claims 1 to 12, having at least one camera for recording an object located in front of a background, with an alteration of the background occurring at a frequency tuned to a recording frequency of the recording camera.

14.   The camera recording system according to Claim 13,
wherein a film-like or sheet-like element influenceable in an optically defined way is provided as a background.

15.   The camera recording system according to Claim 14,
wherein the background element is an electroluminescent or electrochromatic flat element.

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ABSTRACT

The invention relates to a method for image data processing, whereby object data of an image data set representing an image foreground (object data set) is separated from data set representing an image background (background data set), whereby a background to be recorded by a camera is changed into a frequency matching the recording frequency of the recording camera. The background is changed, for instance, by switching between two states or by gradually switching between two states having a plurality of intermediate states. The invention also relates to a camera recording system, especially for implementing the inventive method, comprising at least one camera for recording an object located in front of a background, whereby the background is changed into a frequency matching the recording frequency of the recording camera.

Fig. 1

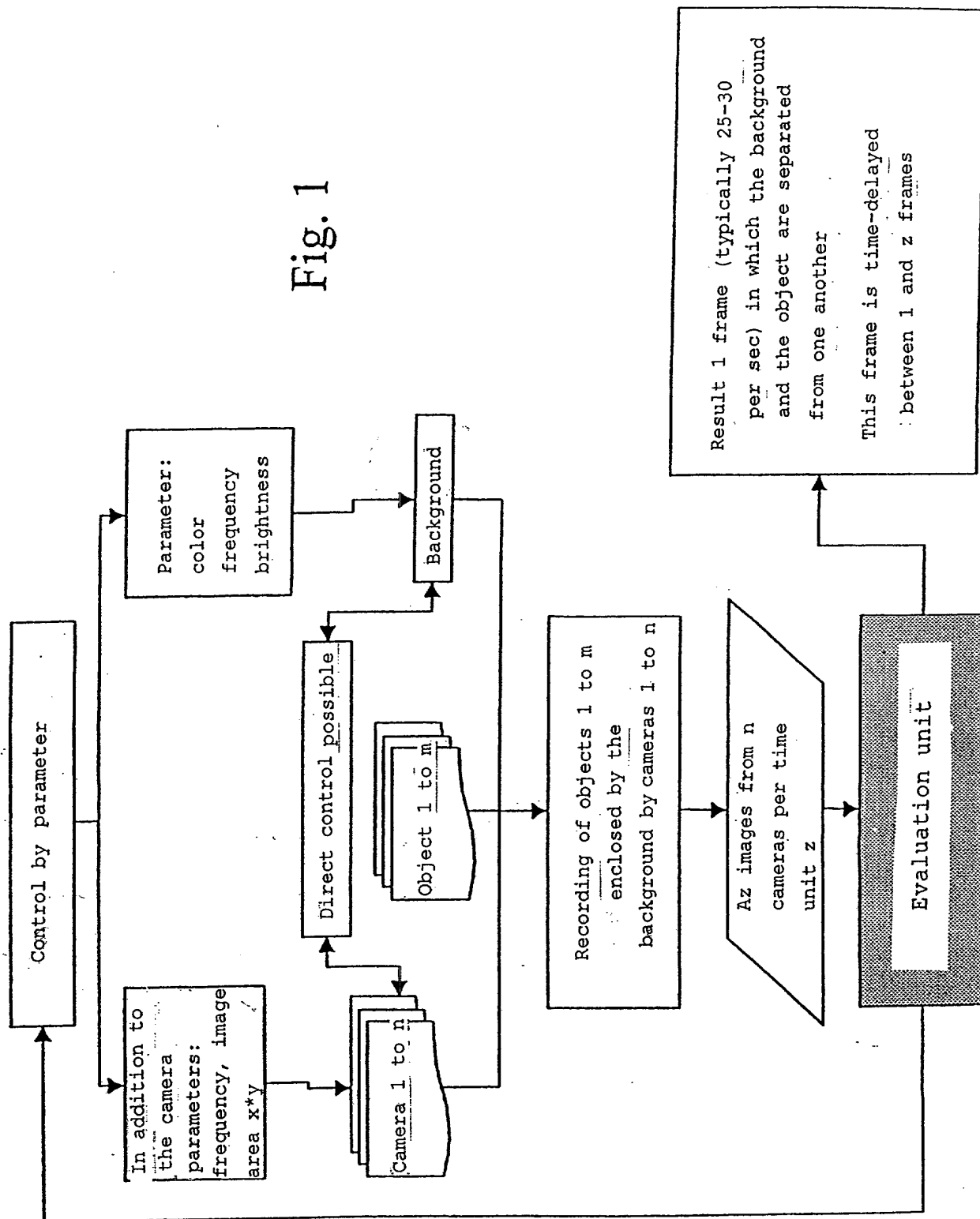Control by parameter

Parameter:
color
frequency
brightness

Background

In addition to
the camera
parameters:
frequency, image
area x*y

Direct control possible

Object 1 to m

Camera 1 to n

Recording of objects 1 to m
enclosed by the
background by cameras 1 to n

Az images from n
cameras per time
unit z

Evaluation unit

Result 1 frame (typically 25-30
per sec) in which the background
and the object are separated
from one another

This frame is time-delayed
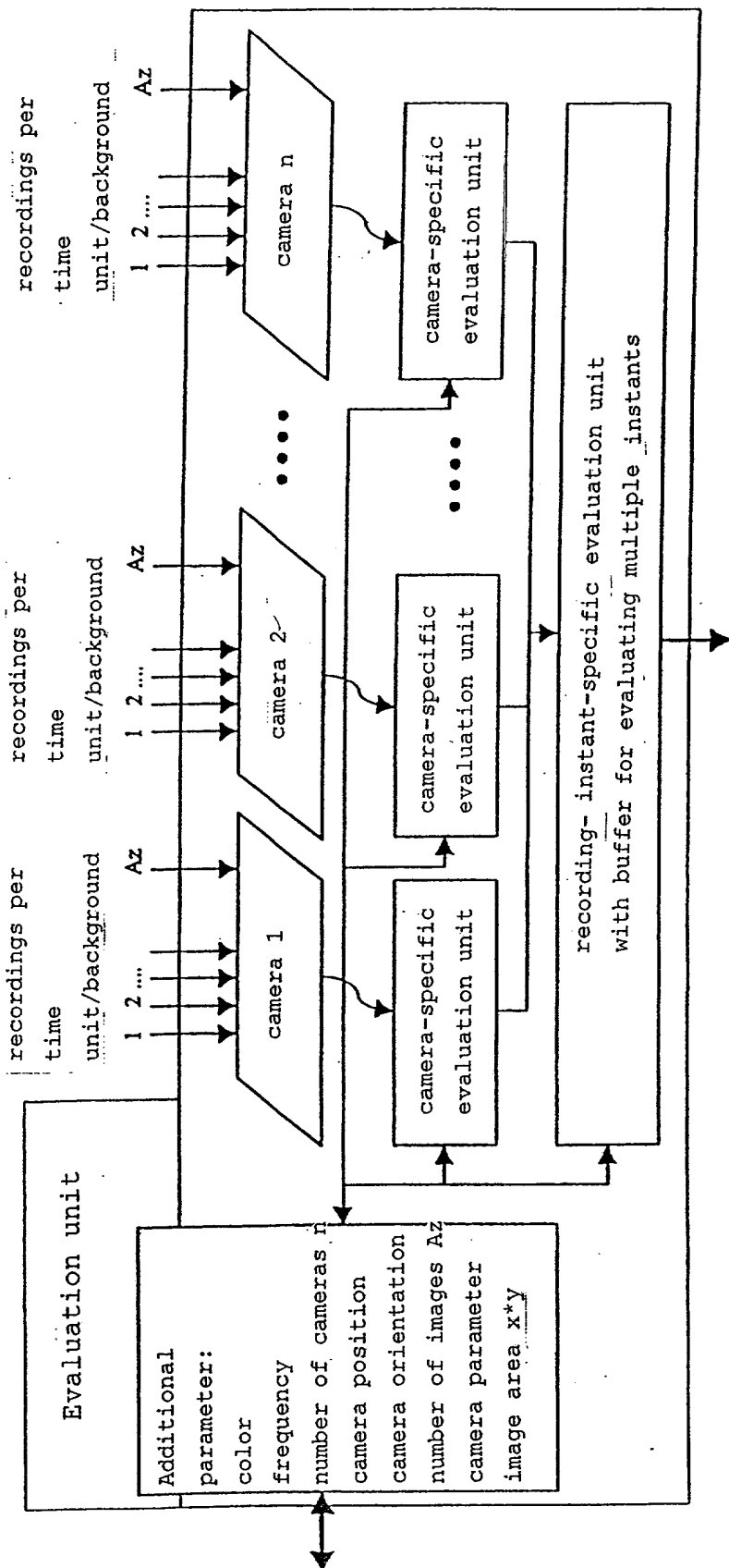between 1 and z frames

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Fig. 2

Attorney's Docket No.: 7195

DECLARATION AND POWER OF ATTORNEY - ORIGINAL APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below beneath my name:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which Letters Patent is sought on the invention entitled

METHOD FOR IMAGE DATA PROCESSING AND
CAMERA RECORDING SYSTEM

the specification of which   _____ is attached hereto
        (check one)   __X__ was filed on __17 July 2000__
                                   as Application S.N. __PCT/EP00/06827__
                                   and was amended on _____

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by an amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International Application which designated at least one country other than the United States, listed below and have also identified below any foreign application for patent or invention certificate, or a PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)   Priority Claimed

__DE 199 32 663.0__	__Germany__	__15 July 1999__	__X__	
(Number)	(Country)	(Day/Month/Year Filed)	YES	NO

(Number)	(Country)	(Day/Month/Year Filed)	YES	NO

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I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below:

(Application Ser. No.)	(Filing Date)
(Application Ser. No.)	(Filing Date)

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Ser. No.)	(Filing Date)	(Status) (patented,pending,abandoned)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

B. Edward Shlesinger, Jr., Reg. No. 17,225; George A. Arkwright, Reg. No. 20,158; George A. Garvey, Reg. No. 17,737; Josefino P. de Leon, Reg. No. 33,166; Terrence L. B. Brown, Reg. No. 32,685; Michael M. Zadrozny, Reg. No. 30,985; and Brian J. Marton, Reg. Agent 30,292;

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The undersigned hereby authorizes the U.S. attorney(s) or agent(s) named herein to accept and follow instructions from HÖSSLE & KUDLEK as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney(s) or agent(s) and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney(s) or agent(s) named herein will be so notified by the undersigned.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that the statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Full name of sole or first inventor **STEFFEN SETZER**
Inventor's signature X _____ Date 04.02.2002
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